

To obviate these difficulties we must first, deepen the soil; secondly, decompose and set free the minerals which it has in a crude state.

The first of these indications to be fulfilled by means of deep plowing and thorough cultivation, the second, by the application of a lime which contains no magnesia, that is, pure lime,

For limes of this class, the analyses of various limestones heretofore made by me can be consulted.

In this connection I will here mention a limestone belonging to "Ephraim Tracey, Dug Hill, three miles from Manchester," as a very superior agricultural lime, for all of the soils of this class, and they mostly surround it.

It contains about eighty per cent. of pure carbonate of lime, (air-slaked lime) and the balance of chlorite and mica slate, which combining with the lime when it is burnt, affords most valuable manure.

We have also the *light red sandy loams* of this county, at the foot of Parr's Ridge, represented by the land of Messrs. Davis, Dorsey, Bentz and others, which extend over the whole county in a line more or less directly parallel with Parr's Ridge. They are famous for producing a variety of Tobacco, known as Bay Tobacco, which always sells at a very high price.

These are best improved permanently by small additions of magnesia lime, air-slaked, that is, put out in heaps, suffered to remain for a long period of time before being applied to the soil, small quantities of Peruvian Guano should be applied to the wheat crop.

*Red Clay Loams*, this variety of soil begins at the eastern border of the above described soils, and extends eastward to where they meet the granite or isinglass soils.

The proper treatment for these Red Clay Loams is a dressing of *pure air-slaked lime*, as a permanent improvement of their texture, and the use of small quantities of Peruvian Guano as a means of giving a quick, early start to the crop.

The next variety of soils we meet in going eastward from these, is the *white isinglass*, soils formed from the disintegration of granite rocks. These soils are easily recognized as having in them bright shining spangles of mica or isinglass, they are exceedingly light and dry, and in their present condition are very poor and barren. They have in them, however, nearly all the requisite substances of a fertile soil, and can be made perfect as to their physical texture by means of the application of quick or water-slaked lime. This will at once give the soil more binding and retentive power, and improve its texture. The lime should be put on in the fall after the land is ploughed for the spring crop, and well harrowed in; to those spring crops Phosphate of Lime should be applied in manner and quantity according to directions previously given. When wheat is sown Peruvian Guano should be used.

These comprise all of the *chief* varieties of soil in Carroll County, they follow each other in regular succession, from west to east, in the order in which they are named, and can easily be recognized by their location as well as by their description.

I have given the above recommendations from many analyses of each variety of soil, and from the congregated practical experience of those who have lived on, and improved it. These different varieties run through Carroll County, and are found in corresponding localities in the adjoining county of Baltimore.

#### LIMESTONES OF CARROLL COUNTY.

There are very many of them used only in the neighborhood of their existence, and which have not been handed to me for examination. After making a call through the public papers for samples of limestones from those who wished them analyzed, I did not deem it my duty to take samples from those who declined to furnish them for the purpose of analysis.

Whenever required, I have complied with requests made both for analysis and subsequent publication.